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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,470	04/30/2001	Horng-Huei Tseng	004728.P058	4625

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EXAMINER

YEVSIKOV, VICTOR V

ART UNIT PAPER NUMBER

2825

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/846,470

Applicant(s)

TSENG, HORNG-HUEI

Examiner

Victor V Yevsikov

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U. S. C. 121

I. Claims 12-17 drawn to a device (flash memory), classified in class 257, subclass 316.

II. Claims 1-11 drawn to a process of making a flash memory, classified in class 438, subclass 257.

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case unpatentability of the Group I invention would not necessarily imply unpatentability of the group II invention, for example, the method of creating the trench of claims 1-11 requires patterning through multiple layers as opposed to the method of claims 12-17 wherein to create trench in the claimed device does not require patterning a plurality of layers. Consequently, the etching mechanisms/chemistries to create the trench can be different.

Because these inventions are distinct for the reasons given above and have acquired a separate status of the art as shown by their different classification, the fields of search are not co-extensive, restriction for examination purposes as indicated is proper.

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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

During a telephone conversation with Mr. Clement Cheng, Reg. No. 45,463 on August 14, 2003, a provisional election was made without traverse to prosecute the invention of Group I, claims 12-17 (device).

Claims 1-11 are withdrawn from consideration.

Applicant in replying to this Office Action must make affirmation of this election.

Objections to the specification

Specification objected to because of the following informalities:

Page 3, line 19, "hallow" should be changed to --shallow--

Page 9, line 2, "14" should be delete

Page 9, line 12, "14' should be changed to --12--

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsong-Minn Hsieh (US 6,326,263 B1) in view of Chia-Ta Hsieh et al. (US 6,153,494 B1).

Tsong-Minn Hsieh discloses a stacked-gate flash memory comprising:

a substrate 12 having a trench 22 formed therein;

a tunneling oxide 14 formed on a surface of the substrate and adjacent to the trench;

a first part of a floating gate 16 (polysilicon) formed on the tunneling gate;

a raised isolation filler 24 (HDP oxide) formed in the trench and protruding over an upper surface of the first part of the floating gate, thereby forming a cavity (not marked) between two adjacent raised isolation filler;

a second part of the floating gate 26 (polysilicon) formed along a surface of the a dielectric layer 32 (oxide/nitride/oxide or silicon oxy - nitride) conformally formed on a surface of the second part of the floating gate; and

a control gate 34 formed on the dielectric layer.

Reference: figs 1-7; cols. 1 and 2, lines 34-33; col. 4, lines 53-65.

Tsong-Minn Hsieh discloses the features out lined above, but does not show exactly a method wherein the cavity to have a U-shaped structure in cross sectional view, wherein the high level of the U-shaped structure is the same with the one of the raised isolation filler.

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However, Chia-Ta Hsieh teach the method wherein the cavity to have a U-shaped structure in cross sectional view, wherein the high level of the U-shaped structure is the same with the one of the raised isolation filler (fig3c; col.6, lines37-43).

It would have been obvious to those skilled in the art to use U- shaped structure in cross sectional view as taught by Tsong-Minn Hsieh/Chia-Ta Hsieh for provides process as is routine in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor Yevsikov whose telephone number is (703) 3050758. The examiner can normally be reached by telephone on Monday to Friday 7:15 AM to 4:45 PM (except second Mondays).

If attempts to reach the examiner by telephone are unsuccessful, examiner's supervisor, Matthew S. Smith, can be reached on (703) 308-1323. The fax phone numbers for the organization where this application or processing is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-3080596.

Victor Yevsikov

August 22, 2003



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800